

Chapter 4 Review

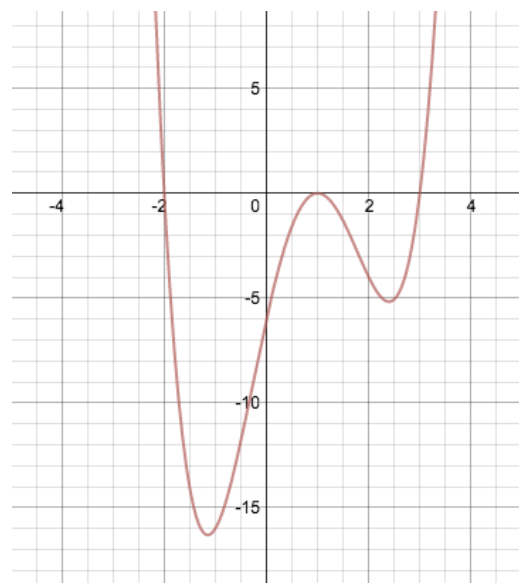
- Form a polynomial with real coefficients, whose zeros and multiplicity are given:

Zeros: 1 mult=3, -2 mult=2, i ; assume that $a_n=1$

- For the polynomial below, determine its degree and list all the complex zeros and their multiplicities:

$$y=(x-3)^2(x+2)(x^2+1)$$

- Based on the graph given...
 - determine the number of turning points and predict the degree of the polynomial.
 - List all the zeros and predict their multiplicity (even or odd)



- Use the Intermediate Value Theorem to determine whether the polynomial has a zero on the given interval:

$$y=-5x^3+2x+6; [0,2]$$

- Use the given zero to predict the rest of the zeros:
zero $1+i$; $f(x)=x^3+6x^2-14x+16$

- Determine the VA, OA, and HA:

$$y = \frac{x^2 + 3x - 4}{x - 2}$$

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7. Solve the inequality algebraically:

a. $(x-3)^2(x-4) > 0$ b. $\frac{(x-3)(x+4)}{x-2} \leq 0$

8. Determine if $(x-2)$ is a factor of the polynomial $f(x)=x^3-2x^2+4x-5$. State which theorems help you to determine this.

9. Give an example of a rational function that has a hole at $x=2$.

10. Graph the following functions using domain, intercepts, and asymptotes:

a. $y = \frac{(3x-12)(x-2)}{(x-1)(x+5)}$

b. $y = \frac{(x^2-9)}{x-3}$

c. $y = \frac{3x^2+4}{x-2}$

11. Solve the following inequality graphically:
 $f(x) \geq g(x)$

